THE EFFECT OF ADDITION OF ACTIVE FLUX (TiO_2) ON THE RESULTS OF FCAW WELDING HARDNESS IN A 36 STEEL MATERIAL

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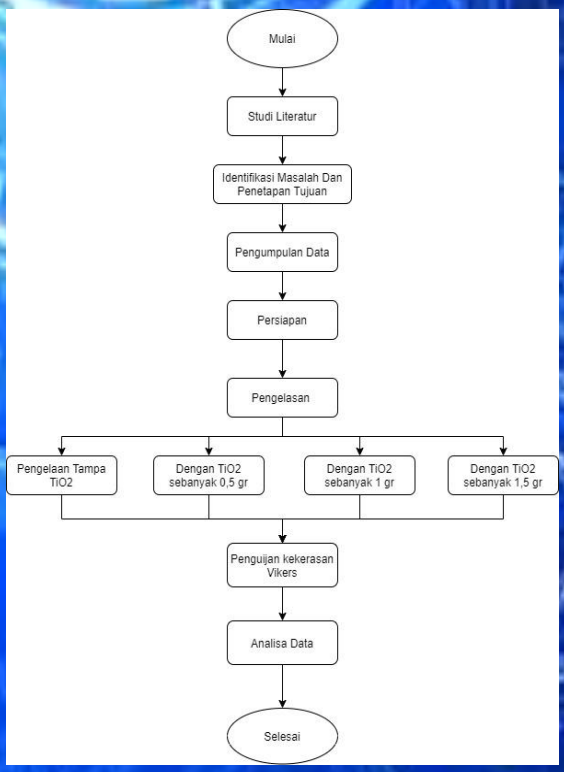
Abstrack

Welding techniques are used intensively in various manufacturing industries, such as: automotive, shipping, aircraft, trains, bridge construction, pressure vessels, and so on. Welding techniques have various advantages for production such as cost savings, size accuracy, and variations in the shape of the weld structure. These advantages, welding techniques cause adverse effects, such as: changes in microstructure, decreased strength and toughness of materials, distortion and residual stress. The factors that affect the quality of the weld start from the planning of the weld, the preparation of the welding, and the procedure when welding. Low carbon steel has a disadvantage that has a less high hardness value so that this research and also a lack of deep penetration, resulting in less than optimal weld strength. Some of the factors that grew in this study were the effect of the addition of active TiO2 flux on the hardness value of the fcaw weld. In this research, using steel material A 36 with a thickness of 10 mm which was connected using a V 60º seam where the additional TiO2 was added with acetone as an adhesive with 3 variations of the addition of TiO2, 0.5 gr, 1 gr and 1.5 gr. Where the resulting hardness value, namely an increase in the hardness value of 19,39 HVN for variations in the addition of 0.5 g of TiO2 and an addition of 20,09 HVR for the addition of TiO2 and for the addition of 1.5 g of TiO2 only experienced an increase in the value of hardness. 4,5 HVN compared to without using TiO2.

FLOW CHART



RESULT OF THE RESEARCH